USSR

RUDENKO, VLADIMIR MIKHAYLOVICH, et al., Maloshumyashchiye vkhodnyye tsepi SVCh priyemnykh ustrovstv, Moscow, Izd. "Svyaz'," 1971. 280 pp, ill. 1 r 25 k.

6/9

USSR

RUDENKO, VLADIMIR MIKHAYLOVICH, et al., Maloshumyashchiye vkhodnyye tsepi SVCh priyemnykh ustrovstv, Moscow, Izd. "Svyaz'," 1971. 280 pp, ill. 1 r 25 k.

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RUDENKO, VLADIMIR MIKHAYLOVICH, et al., Maloshumyashchiye vkhodnyye tsepi SVCh priyemnykh ustrovstv, Moscow, Izd. "Svyaz'," 1971. 280 pp, ill. 1 r 25 k.

8/9

USSR

RUDENKO, VLADIMIR MIKHAYLOVICH, et al., Maloshumyashchiye vkhodnyye tsepi SVCh priyemnykh ustrovstv, Moscow, Izd. "Svyaz'," 1971. 280 pp, ill. 1 r 25 k.

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USSR

UDC 621.375.93.002.2

GERTSENSHTEYN, M. YE., KOSTIN, A. A., MAGNUSHEVSKIY, V. R., MARKOV, V. V., SOBOLEVA, O. A., SOLOVEY, L. G., Active Members of the Society

"Plug-in Module for a Wide Band Parametric Amplifier"

Moscow, Radiotekhnika, No 11, 1971, pp 105-107

Abstract: A description is presented of a miniature modular design of a centimeter-range parametric amplifier with integral structure of the oscillatory systems. The operating principle of the module is discussed, and schematic diagrams of basic elements are presented. The primary oscillatory system comprises a varactor diode and an auxiliary lumped inductance included in series with respect to the signal frequency. The pass band of the module is actually determined by the time constant of the diode and is 8-9% of the operating frequency at a level of 1 decibel with amplification of 10-11 decibels. Further expansion of the pass band to 11-12% of the operating frequency is obtained by using a second corrector. The frequency-amplitude characteristic of the module with the additional corrector is presented. The application of a step structure as the corrector, transformer and rejector of the other frequencies permits optimal coupling of the

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GERTSENSHTEYN, M. YE., et al, Radiotekhnika, No 11, 1971, pp 105-107

primary oscillatory system to the matching quadripole in the signal circuit and realization of pass bands of the parametric module which are limiting for the diode used. This design is applicable in all cases where the series resonance frequency of the diode is between the signal frequency and the open-circuit frequency.

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USSR

UDC 664.95

GADZHIYEV, D. N., and MAGOMAYEV, A. A., Candidate of Technical Sciences, Dagestan University

"Survival of Staphylococcus in Sunflower and Olive Oil"

Moscow, Rybnoye Khozyaystvo, No 6, 1971, pp 66-69

Abstract: Ten samples each of olive and refined sunflower oil were taken from different commercial lots. Six milliliters of fish-peptone bouillon containing 7.5 percent common salt were put into a number of test tubes, small lumps of cotton were dipped into it, and the test tubes were sterilized in an autoclave (the cotton rising to the surface of the bouillon). Three milliliters of the oil being tested were injected into these test tubes; after the cotton had absorbed the oil it was pushed to the bottom of the tube. The inoculations were incubated at a thermostat temperature of 37°C for 48 hours, then smears made of the bouillon, stained and examined under microscope. No Staphylococcus was found in the olive oil, while in the sunflower oil it was found in three out of the 10 samples taken. Artificial inoculation with Staphylococcus was made of samples of sunflower oil and olive oil, using strains ST-1, ST-2, ST-Ts, and ST-A. All were found to be toxic. After one to five days the toxic oil was inoculated into fish-peptone bouillon and into slant agar. Two tubes containing oil with an equal degree of toxicity were

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GADZHIYEV, D. N. and MAGOMAYEV, A. A., Rybnoye Khozyaystvo, No 6, 1971, pp 66-69

taken in each case for analysis, with two control samples for every 10 tubes of toxic oil. The results showed that Staphylococcus survives well in sunflower oil but perishes fast in olive oil, and that with intoxication of from 100 to 500 million microbe bodies kept for 45 days Staphylococcus can be very well preserved for a long period.

The conclusion is that Staphylococcus may be introduced into canned food with sunflower oil when such oil is not first baked. Olive oil possesses bacteriostatic properties, apparently cannot be a source of Staphylococcus infection in canned fish, and may be used without advance baking.

USSR

UDC: 621.43.539.400.15

MAGOMAYEV, L. D., VVMIOLU, Leningrad

"Concerning Theories of Contained Twisting of Turbine Blades"

Kiev, Problemy Prochnosti, No 9, Sep 72, pp 27-33

Abstract: Theoretical expressions are derived for calculating the stresses and strains in turbine blades subjected to twisting, assuming that the blade is joined to the rotor with absolute rigidity, so that there is zero warpage in the root section of the blade under strain. The author uses two versions of the basic theory -- an approximate version and a more exact version -- in deriving the final expressions. It is found that the more exact theory can be used to determine tangential stresses in the root section of the blade, and that both theories are equivalent for practical purposes in dynamic computations, particularly in vibration analysis.

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USSR

UDC 621.315.592

KOVTONYUK, N. F., AMRINOV, N. M., and MAGOMEDOV, A. A., Moscow Institute of Chemical Mechanical Engineering

"Measurement of the Basic Electrophysical Parameters in Thin Films of Semiconductors Using the Method of an Insulated Crystal"

Tomsk, Izvestiya VUZ, Fizika, No 5, 71, pp 105-109

Abstract: The authors propose a procedure and set-up for measuring the specific resistance, concentration, and mobility of free charges in thin films of semiconductors. The basis of the method is the dependence of the magnitude of the power transmitted to the ultrahigh frequency transmission lines on the concentration and mobility of free charges in a semiconductor insulated from electrodes on both sides by dielectric films placed into the line. The experimental results are given. This article seeks to solve the problems in measuring the characteristic parameters of epitaxial films by substituting noncontact methods for the contact ones which are difficult to use in measuring samples with small linear dimensions. The authors discuss the method and support their statements with a block diagram of the set-up and with equations. The test results are shown in two figures depicting signal versus specific resistance of the crystals and signal versus concentration of free charges.

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KOVTONYUK, N. F., et al, Izvestiya VUZ, Fizika, No 5, 71, pp 105-109

The measurement results were compared with measurements using the Hall effect and were found to be within satisfactory measurement error (15-25%). Finally, the authors state that by using the method of an insulated crystal it is possible to obtain the necessary information about the properties of materials, especially when the samples have an area greater than 1 mm^2 and a thickness greater than 10-100 μ. The article contains three figures and a bibliography of five titles.

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1/2 011 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ACETYLATION OF 2,3,DIMETHYLBUTADIENE TRICARBONYL IRON -U-

AUTHOR-(03)-NESMEYANOV, A.N., ANISIMOV, K.N., MAGOMEDOV, G.K.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (4), 959

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BUTADIENE, IRON COMPOUND, CARBONYL COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605013/B08 STEP NO--UR/0062/70/000/004/0959/0959

CIRC ACCESSION NO--AP0140354

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140354

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION IN 1:1.2:1.2 MOLAR RATIO OF CH SUB2:CMECME:CH SUB2) SUB2.FE(CO) SUB3, ACCL, AND ALCL SUB3 OR IN 1:1.2:2.4 RATIO WITH AC SUB2 O AND ALCL SUB3 1 HR AT 00EGREES GAVE UP TO 82DEGREES CH SUB2:CMECME:CHAC.FE(CO) SUB3, YELLOW, M. 5708DEGREES. ITS FORMATION WAS MUCH MORE FACILE THAN THAT OF THE BUTADIENE ANALOG, OWING TO THE POS, INDUCTIVE EFFECT OF THE 2 ME GROUPS, FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--ACTION OF LITHIUM ALUMINUM HYDRIDE ON KETONES OF BUTADIENEIRON TRICARBONYL -U-

AUTHOR-(03)-NESMEYANOV, A.N., ANISIMOV, K.N., MAGOMEDOV, G.K.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 715-17

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IRON COMPOUND, CARBONYL COMPOUND, BUTADIENE, LITHIUM HYDRIDE, ALUMINUM HYDRIDE, KETONE, PHENOL, ALUMINUM COMPLEX, IR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1880 STEP NO--UR/0062/70/000/003/0715/0717

CIRC ACCESSION NO--AP0123668

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123668

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HOLDING BZH WITH ACCH:CHCH:CH SUB2 TIMES FE(CO) SUB3 (I) IN ETOH IN THE PRESENCE OF NAOH 2 HR GAVE 91PERCENT CINNAMOYLBUTADIENEIRON TRICARBONYL, YELLOW, M. 74DEGREES. THIS AND LIALH SUB4 IN THF OR ET SUB2 O GAVE IN 3 HR 1,PHENYL,3,HEPTANOL, B SUB7 137-8DEGREES, N PRIME20 SUBD 1.5040. LIALH SUB4 AND BETA IONONEIRON TRICARBONYL SIMILARLY GAVE AFTER SEVERAL HR IN THF SOME 50PERCENT BETA IONOL, N PRIME20 SUBD 1.5010. NO HYDROGENATION OF THE DOUBLE BONDS TOOK PLACE. THE RESULTS OF THESE REDNS. INDICATE THAT THE METAL BUTADIENE BOND IN SUBSTANCES RELATED TO I IS POLARIZED SO AS TO PROVIDE A PARTIAL POS. CHARGE ON FE, AND THIS SHIFT OF ELECTRON D. DOES NOT RECEIVE FULL COMPENSATION FROM CARBONYL GROUPS, SINCE THESE ARE ELECTRON ACCEPTORS RELATIVE TO THE METAL. IT IS SUGGESTED THAT REDN. OF I AND RELATED COMPDS. BY LIALH SUB4 STARTS WITH FORMATION OF CONFIGURATION IN WHICH A HYDRIDE ATTACK TAKES PLACE ON THE FE ATOM AND THE BONDS OF FE THAT ARE LIBERATED FROM BUTADIENE NOW BECOME INVOLVED WITH AL TO FORM A COMPLEX OF THE DIENONE WITH AL SIMILAR TO THAT FORMED WITH A STYRYL GROUP AND AL IN UNSATD. KETONES. THE COMPLEX PERHAPS ALSO HAS BONDS OF KETONE GROUPING TO AL, SINCE THE REDN. OF THE KETONE GROUP IS SIMULTANEOUS WITH REDN. OF THE METAL TO LIGAND BOND. THIS IS FURTHER SUPPORTED BY IR SPECTRA. FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 639.2.067.7

MAGOMEDOV, K. A., Astrakhan Technical Institute of the Fishing Industry and Fisheries

"Investigations of the Action Zone of the Biosignal Source in a Body of Water"

Moscow, Rybnoye Khozyaystvo, No 11, 1972, pp 68,69

Translation: Experiments were carried out in one of the 120-m deep fishing sectors of the Southern part of the Caspian Sea. A tape recording of fish sounds was used as a source of sound. A previously amplified sound was fed to an underwater radiator. A piezoceramic hydrophone, 50 mm in diameter, served as a sound receiver. Investigations were performed at various noise levels of the water body and with the location of the source and receiver at a depth of 9 m from the surface of the fishing area.

Figures 1 and 2 show the field intensity, according to the averaged experimental data (broken lines), and the calculated

field intensity (solid lines), according to the formula

$$\frac{T(r_1) - T_n - T_f}{20}$$

$R=R_1.10$

where $T(R_1)$ and T_n are, respectively, the sound pressure level over unit distance R_1 and the noise level of the water body in reference to $2x10^{-5}$, water-body field.

In examining graphic relationships in Figure 1, obtained at at constant noise level of the water body T_n, it can be said that the sound pressure level at unit distance exerts considerable influence on the dimension of the action zone of the biosignal source.

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MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

In analyzing relationships shown in Figure 2, for invariants $T(R_1)$ and T_n, we may conclude that with increase of the signal/noise ratio P_s/P_n (where P_s and P_n are the sound pressure at the point of the reception and the noise of the water body, respectively) the dimension of the action zone of the biosignal source decreases, with decrease of the P_s/P_n ratio it increases. An especially rapid increase is observed at $P_sP_n<1$.

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USSR

MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

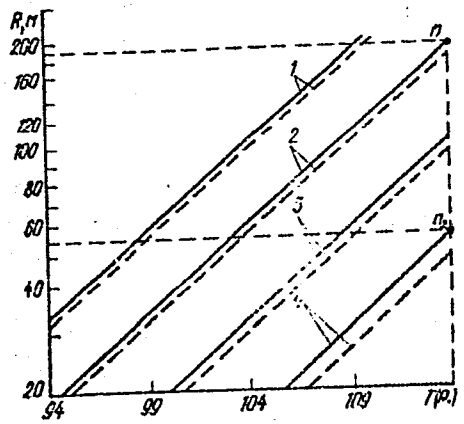

Fig. 1. Influence of acoustic pressure level at unit distance from biosignal source on dimensions of its action zone, for noises of the water body (in dB): 1 - 63.5; 2 - 71.4; 3 - 74; 4 - 79.4; 2 and 1, 3, 4 - calculated under assumption that $P_s/P_n = 1$.

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USSR

MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

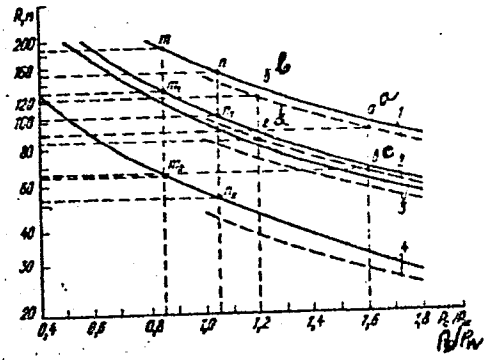

Fig. 2. Influence of the threshold signal/noise ratio on dimensions of the action zone of biosignal source, for noises of the water body (in dB): 1 - 71.4; 2 - 63.5; 3 - 74; 4 - 79.4; 2 and 1, 3, 4 - sound pressure levels at unit distance 104 and 114 dB, respectively.

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MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

The threshold value depends to a great degree on the kind of the signal. For example, according to the data of V. P. Protasov (1965) the noise signal is perceived by fish at $P_s/P_n = 1$, whereas the pulse signal is perceived at P_s/P_n 1.

Figure 2 shows as an example the calculated limits of the action zone of the source of biological noise field for the signal to noise ratio equal to 0.85 and 1.05. As we see, the increase in P_s/P_n by 0.2 at water-body noise levels 63.5, 71.4 and 79.4 d B leads to a decrease of dimensions of the action zone of the source by 25, 35 and 13 m, respectively.

The water-body noise level also exerts an essential influence on dimensions of the action zone of the biosignal source.

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MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

In comparing relationships obtained at various water-body noise levels (see Figure 1), we note that with an increase of T_n the dimension of the action zone of the biosignal source decreases. By way of illustration, in the given figure dimensions are shown of the zone R, corresponding to T_n = 71.4 dB (point n) and T_n = 79.4 dB (point n_2). As we see, the increase of T_n by 8.0 dB causes a decrease of R by approximately 135 m.

The analogous picture is also observed in Figure 2. Thus, for example, the increase of T_n by 8.0 dB (points n and n_2) leads to a decrease of R by approximately 100 m.

At high water-body noises the divergence between the experimental and calculated lines increases, which, apparently, is explained by a scattering of sound over the uneven surface of the water body, and consequently, by a damping of the acoustic wave in the near-surface layer.

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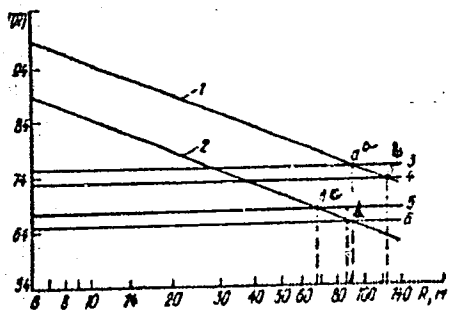
MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

Dimensions of the zone of the acoustic field source may be also determined from the graphs of the drop of sound pressure level of the signal as a function of distance. To do this, in the diagram (Figure 3) straight lines are drawn parallel to the axis of abscissas, whose ordinates are equal to the corresponding values of $T_f + T_n$.



(See Caption next page)

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MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

Figure 3. Determination of dimension of the action zone of biosignal source from a drop diagram of the sound pressure level as a function of distance: 1 and 2 - $T(R_1)$, equal to 114 and 104 d B, respectively; 3-6 - $T_n + T_f$, equal 75.4, 72.8, 67.5, and 64.9 dB respectively.

The abscissa of the intersection point of the straight line with the line characterizing variation of the sound pressure level as a function of distance will give the value of dimensions of the zones of the sound field source. By way of example Figures 2 and 3 show dimensions of the zone of sound field source corresponding to points a, b, c, d, oftained under identical conditions. Each graphical relationship was obtained for definite water-body noise level. In actual fact, in a fishing water area various fluctuations in the noise level are possible.

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MAGOMEDOV, K. A., Rybnoye Khozyaystvo, No 11, 1972, pp 68-69

Dimensions of the action zone of the source for the case where the noise level varies as a function of distance L from the source, and the level of the signal, can be determined from the formula:

$$\frac{T(R_1) - T(L_1) - T_f}{20} \qquad R = L.10$$

where $T(L_1)$ is the sound pressure level of the noise source at unit distance.

The investigations performed permit us to make more precise the technique of the calculation of the action zone of the acoustic field of a biosignal source for the case where the weakening of the biosound with distance takes place according to the spherical law, R^{-1}. They

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also establish the character and degree of the influence of the sound pressure level at unit distance of the threshold signal/noise ratio and the water-body noise level on dimensions of the action zone of the biosignal source.

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UDC 518:517.9:533.7

USSR

KOSAREV, V. I., MAGOMEDOV, K. M., Moscow

"Divergent Difference Scheme for Calculating Supersonic Steady-State Flows of Complex Structure"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 13, No 4, Jul/Aug 73, pp 923-937

Abstract: A method is described for constructing a difference scheme which approximates equations of steady-state flow of an inviscid, thermally non-conductive gas in divergent form. Numerical results show that the resultant scheme is suitable for continuous calculation (without isolation of discontinuity surfaces) of flows with internal compression shocks.

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7

USSR M

MAGOMEDOV, K. M., Moscow

"Hypersonic Flow of a Viscous Gas Around Blunt Bodies"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti I Gaza, No 2, March-April 1970, pp 45-56

Abstract: This paper contains a discussion of hypersonic flow around blunt bodies investigated from the point of view of solving the Navier-Stokes equations in the Reynolds number R range for which these equations are valid with the condition of adherence to the surface of the body. In the case where the thickness of the entire perturbed zone (for very large values of R this zone contains a nonviscous shock layer and a boundary layer) is appreciably less than the characteristic dimensions of the body (and this case occurs for any surface of blunt bodies with $k < <1$), a simple and sufficiently accurate theory based on asymptotic expansions or estimates can be constructed. The generalized Rankin-Hugoniot conditions are proposed for the outer boundary of the shock layer. These conditions are valid on lowering the order of the simplified Navier-Stokes equations in the basic region. For example, for the Euler equation ($R = \infty$) there are ordinary discontinuity relations, and for equations of the Prandtl type the generalized Rankin-Hugoniot conditions take into account the terms on the order of $R^{-1/2}$.

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USSR

MAGOMEDOV, K. M., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti I Gaza, No 2, March-April 1970, pp 45-56

The asymptotic solution of the Navier-Stokes equations is constructed for hypersonic flow around "smooth" blunt, bodies for $k \to 0$, $R^{-1} \to 0$, but when $m = R^{-1}$, k is finite. The equations obtained have an analytical solution in the case of flow around a hemisphere reflecting not only the qualitative effect of various factors but also having satisfactory accuracy in the viscous layer range $k^2 \leq R^1 < k^{1/2}$. This problem was investigated earlier, but incorrect boundary conditions were stated. A numerical solution of the problem was also obtained earlier.

The general case of hypersonic flow around blunt bodies including the ranges of the viscous layer and the classical Prandtl boundary layer is also investigated. Equations the boundary conditions for which at the outer boundary are the generalized Rankin-Hugoniot conditions and the boundary conditions at the surfaces of the body are the ordinary conditions of adherence, are obtained on the basis of asymptotic estimates. Whereas for bodies with smooth shapes such as spheres which have basically been investigated in connection with viscosity the parabolic type equations are solved stepwise beginning with the line of symmetry, for "very blunt" bodies such as discs and for intermediate cases, the solution in the vicinity of the critical point is not closed.

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1/2 038 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--HYPERSONIC FLOW OF A VISCOUS GAS PAST BLUNT NOSED BODIES -U-

AUTHOR--MAGOMEDOV, K.M.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIDKOSTI I GAZA, MAR.-APR. 1970, P. 45-56
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HYPERSONIC FLOW, BLUNT BODY, VISCOUS FLOW, REYNOLDS NUMBER, NAVIER STOKES EQUATION, PRANDTL BOUNDARY LAYER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1187 STEP NO--UR/0421/70/000/000/0045/0056

CIRC ACCESSION NO--AP0124841

2/2 038 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124841

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF HYPERSONIC FLOWS PAST BLUNT NOSED BODIES ON THE BASIS OF A SOLUTION TO THE NAVIER STOKES EQUATION FOR A RANGE OF REYNOLDS NUMBERS IN WHICH THESE EQUATIONS HOLD FOR THE CONDITION OF STICKING AT THE SURFACE OF THE BODY. A THEORY, BASED ON ASYMPTOTIC EXPANSIONS, IS DEVELOPED FOR THE NOSE SURFACE OF THE BODY. FOR A VISCOUS FLOW PAST A HEMISPHERE, THE EQUATIONS OBTAINED ARE SHOWN TO POSSESS ANALYTICAL SOLUTIONS WHICH REFLECT THE QUALITATIVE INFLUENCE OF VARIOUS FACTORS, AND ARE SUFFICIENTLY ACCURATE IN THE VISCOUS LAYER REGION. THE GENERAL CASE OF HYPERSONIC FLOW PAST BLUNT NOSED BODIES, INCLUDING THE VISCOUS LAYER REGION AND THE REGION OF THE CLASSICAL PRANDTL BOUNDARY LAYER, IS EXAMINED.

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MAGOMEDOV, KH. A.

IV-3. EFFECT OF THE ELECTRIC FIELD ON THE GROWTH RATE AND PERFECTION OF GALLIUM ARSENIDE FILMS

[Article by M. M. Guseynov, M. M. Sheftal', Kh. A. Magomedov, Institute of Crystallography of the USSR Academy of Sciences, Dagosuniversitet; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 44]

In this paper a study was made of the effect of the constant electric field on the growth rate and the perfection of epitaxial films of gallium arsenide grown on the insulating substrates by the gas transport reaction method. The crystallization was carried out in a horizontal chamber adapted to study the effect of the electric field intensity on the film growth process. On the insulating substrates of quartz, fluorite and mica with orientation of (1011), (111) and (100) respectively, n-type, highly pure GaAs was grown. The experimental procedure and the thermal conditions of the crystallization process were described.

A study was made of the field affect on the growth rate of the film in the 30-100 volt/cm range. An increase in the growth rate was detected which is proportional to the field intensity beginning with 40 volts/cm except with a negative potention on the substrate. For a film grown on a quartz substrate for example, growth rate with E = 50 volts/cm is 0.35 microns/minutes as opposed to 0.45 micron/minute for E = 0.

Results are presented from metal-x-ray and electron diffraction studies of films indicating worsening of the crystal lattice of the latter for fields above 30 volts/cm. The morphology of these films is distinguished by a dull surface and the appearance of growth configurations in contrast to the films deposited in the absence of a field and for fields to 30 volts/cm.

The explanation for the mechanism of the effect of the field on the growth rate and perfection of the gallium arsenide films is presented.

1/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PHYSICAL PROPERTIES OF AGTLTE SUB2 AND CUTLTE SUB2 IN SOLID AND LIQUID STATES -U-

AUTHOR-(02)-GASANOV, S.A., MAGOMEDOV, YA.B.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(4), 820-2

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--SILVER COMPOUND, COPPER COMPOUND, THALLIUM, TELLURIUM, ELECTRIC CONDUCTIVITY, ELECTROMOTIVE FORCE, PHONON, IMPURITY SEMICONDUCTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1538 STEP NO--UR/0363/70/006/004/0820/0822

CIRC ACCESSION NO--AP0125166

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0125166
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELEC. COND., THERMAL EMF., AND THERMAL COND. OF CUTLTE SUB2 AND AGTLTE SUB2 AT 300-950DEGREESK WERE STUDIED TO REVEAL THE MECHANISM OF ELEC. AND HEAT TRANSFER OF THESE COMPDS. AT HIGH TEMPS. IN THE SOLID AND LIQ. STATES, AND TO DET. THE POSSIBILITY OF THEIR PRACTICAL APPLICATION IN THERMOELEC. DEVICES. THE COMPDS. TO BE STUDIED WERE PREPD. BY DIRECT MELTING OF THE COMPONENTS IN STOICHIOMETRIC RATIO. THE ELEC. COND. AND THERMAL EMF. CURVES SHOW THAT AGTLTE SUB2 IS AN IMPURITY SEMICONDUCTOR ALL THE WAY UP TO THE M.P., WHEREAS IN CUTLTE SUB2, INTRINSIC COND. SETS IN AT 100DEGREES BELOW THE M.P. ON TRANSITION FROM THE SOLID TO THE LIQ. STATE, THE ELEC. COND. OF BOTH COMPDS. INCREASED SLIGHTLY, AND THE THERMAL EMF. DECREASES. THE MELTS OF BOTH COMPDS. BEHAVE AS INTRINSIC SEMICONDUCTORS, WITH THE WIDTH OF THE FORBIDDEN BAND BEING 0.47 EV FOR AGTLTE SUB2 AND 0.21 EV FOR CUTLTE SUB2. SHORT RANGE ORDER IS RETAINED IN BOTH THE SOLID AND LIQ. STATES. THE THERMAL COND. OF BOTH COMPDS. IN THE SOLID STATE DECREASES WITH THE TEMP.; ON MELTING, IT INCREASES ABRUPTLY AND IN THE LIQ. STAT IT THEN CONTINUES TO INCREASE LINEARLY. IN THE SOLID STATE IN THE IMPURITY COND. REGION, THE THERMAL COND. IN CUTLTE SUB2 AND AGTLTE SUB2 IS BROUGHT ABOUT BY PHONONS AND CURRENT CARRIERS, WHEREAS IN THE LIQ. STATE, BIPOLAR THERMAL COND. IS OBSD. FACILITY: INST. FIZ. DAGESTAN. FILIALA, MAKHACHKALA, USSR.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--THERMAL CONDUCTIVITY OF COMPLEX A PRIMEI B PRIMEV C PRIMEVI SUB2 SEMICONDUTORS IN SOLID AND LIQUID STATES -U-
AUTHOR-(03)-GADZHIYEV, G.G., MAGOMEDOV, YA.B., ISMAYLOV, SH.M.

COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(1), 213-15

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, SEMICONDUCTOR MATERIAL, THERMAL EFFECT, COPPER COMPOUND, ARSENIC COMPOUND, ANTIMONY COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0921 STEP NO--UR/0294/70/008/001/0213/0215

CIRC ACCESSION NO--AP0107450

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0107450

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL COND. (LAMBDA) OF CUSBTE SUB2, CUSBS SUB2, AND CUASSE SUB2 WAS MEASURED IN BOTH SOLID AND LIQ. STATES AT 300-1000DEGREESK. THE LAMBDA OF THE 3 COMPDS. DECREASES WITH INCREASE IN TEMP. IN THE SOLID STATE GREATER THAN OR EQUAL TO 300DEGREESK AND IT INCREASES WITH INCREASE IN TEMP. IN THE LIQ. STATE LESS THAN OR EQUAL TO 1000DEGREESK. THE MIN. IN LAMBDA IS IN THE SOLID STATE FOR CUSBTE SUB2, THE M.P. IN THE SOLID STATE FOR CUSBS SUB2, AND IN THE LIQ. STATE FOR CUASSE SUB2. THE JUMP IN LAMBDA AT THE M.P. IS POS. FOR CUSBTE SUB2 AND CUSBS SUB2 AND NEG. FOR CUASSE SUB2. CUASSE SUB2 IS AN INTERMETALLIC SEMICONDUCTOR WITH A METALLIC COND. AND THE INTRINSIC COND. OF CUSBTE SUB2 AND CUSBS SUB2 BEGINS AT 500 AND 550DEGREESK, RESP. ALL 3 COMPDS. ARE INSTRINSIC SEMICONDUCTORS IN THE LIQ. STATE. THE COND. OF CUSBTE SUB2 AND CUSBS SUB2 CONSITS OF THE PHONON AND ELECTRON CONDS. IN THE SOLID STATE AND IN THE INTRINSIC COND. REGION THERE IS AN ADDNL. COND. DUE TO THE BIPOLAR THERMAL DIFFUSION. THE WIDTH OF THE FORBIDDEN ZONE WAS CALCD. FOR CUSBTE SUB2 AS 0.16 EV AND FOR CUSBS SUB2 AS 0.42 EV. OVER THESE 3 CONDS., THE PHONON COND. IF SOLID CUASSE SUB2 IS SUPERIMPOSED. FACILITY: ISNT. FIZ., MAKHACHKALA, USSR.

UNCLASSIFIED

1/3 032 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--THERMAL CONDUCTIVITY OF COMPLEX SEMICONDUCTOR COMPOUNDS IN SOLID AND MOLTEN STATES -U-

AUTHOR-(02)-GADZHIYEV, G.G., MAGOMEDOV, YA.B.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2), 387-8

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, SEMICONDUCTOR PROPERTY, LIQUID SEMICONDUCTOR, MELTING POINT, PHONON, TEMPERATURE DEPENDENCE, ELECTRON MOBILITY, THERMOELECTRIC PROPERTY, SELENIDE, TELLURIDE, COPPER COMPOUND, ANTIMONY COMPOUND, ARSENIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1484 STEP NO--UR/0363/70/006/002/0387/0388

CIRC ACCESSION NO--AP0118473

UNCLASSIFIED

2/3 032 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118473

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ORDER TO EXPLAIN THE HEAT TRANSFER MECHANISMS AND TO MORE ACCURATELY DEFINE THE PROBLEM CONCERNING THE THERMOELEC. QUALITY IN THE SOLID AND THE MOLTEN STATES, THE THERMAL COND. OF CU SUB3 ASSE SUB4, CU SUB2 SBSE SUB4, AND CUSBTE SUB2 AT 300-1000DEGREESK WAS INVESTIGATED. THERMAL COND. WAS MEASURED BY THE ABS. METHOD UNDER STEADY STATE HEAT CONDITIONS. AT ROOM TEMP. THE THERMAL COND. FOR CU SUB3 ASSE SUB4 IS 2.7 W PER M DEGREE, AND WITH INCREASING TEMP. IT DECREASES LINEARLY. A SHARPER DECREASE TAKES PLACE FROM 700DEGREESK ON TO THE M.P., WHICH IS APPARENTLY ASSOCD. WITH THE TRANSITION OF CU SUB3 ASSE SUB4 FROM THE LOW TEMP. TETRAGONAL TO THE HIGH TEMP. CUBIC PHASE. IN THE SOLID STATE THE FUNDAMENTAL HEAT TRANSFER MECHANISM IS THE PHONON ONE, ALL THE SAY TO THE M.P. THE ELECTRONIC PORTION OF THE THERMAL COND. AS CALCD. FROM THE WIEDEMANN-FRANZ RATIO IS 5.2 TIMES 10 PRIME NEGATIVE3 W PER M DEGREE AT ROOM TEMP., AND WITH INCREASING TEMP. IT INCREASES, ATTAINING A VALUE OF 0.5 W PER M DEGREE PRIOR TO THE M.P. AT THE M.P. THE THERMAL COND. INCREASES ABRUPTLY, AS DOES THE ELEC. COND., AND IT INCREASES UPUPON FURTHER HEATING IN THE MOLTEN STATE. THIS MEANS THAN AN ADDNL. HEAT TRANSFER MECHANISM, NAMELY BIPOLAR THERMAL COND., IS PRESENT. THE TEMP. DEPENDENCE OF THE THERMAL COND. OF CU SUB3 SBSE SUB4 IS SIMILAR TO THAT OF CU SUB3 ASSE SUB4, EXCEPT THAT UPON MELTING, THE THERMAL COND. OF CU SUB3 SBSE SUB4 DOES NOT EXPERIENCE MARKED CHANGES; CERTAIN OTHER DIFFERENCES ARE ALSO NOTED. IN THE CASE OF CUSBTE SUB2 THE ELECTRONS AND THE PHONONS ARE THE HEAT CARRIERS FROM ROOM TEMP. TO THE M.P. -

3/3 032 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118473

ABSTRACT/EXTRACT--THE ELECTRONIC PORTION OF THE THERMAL COND. AT ROOM TEMP. IS 1.7 W PER M DEGREE AND EXCEEDS THAT OF THE PHONON PORTION. AT THE INSTANT OF THE MELTING THE THERMAL COND. OF CUSBTE SUB2 INCREASE ABRUPTLY BY A FACTOR OF 1.5, AFTER WHICH THE THERMAL COND. OF THE MELT INCREASES. THE COURSE OF THE THERMAL COND. IS EXPLAINED SATISFACTORILY BY THE PRESENCE OF ELECTRONIC AND BIPOLAR THERMAL CONDS. THE HIGH ELEC. COND., THE OPTIMUM CARRIER CONCN., AND THE LOW THERMAL COND. OF CUSBTE SUB2 AS COMPARED TO THOSE OF OTHER A PRIMEI B PRIMEV C PRIMEVI SUB2 TYPE COMPOS. INDICATE THAT OF THIS COMPD. CAN BE USED FOR MAKING THERMOELEC. ELEMENTS. FACILITY: INST. FIZ., MAKHACHKALA, USSR.

UNCLASSIFIED

USSR

UDC: 546.56'86'23:541.66

GADZHIYEV, G. G., and MAGOMEDOV, YA. B., Institute of Physics, Dagestan Branch, Academy of Sciences USSR, Makhachala

"Heat Conductance in Complex Semiconductor Compounds in Solid and Liquid States"

Moscow, Neorganicheskiye Materialy, Vol 6, No 2, Feb 70, pp 387-388

Abstract: The thermal conductance of Cu_3AsSe_4, Cu_3SbSe_4, and $CuSbTe_2$ was studied at 300--1000°C to determine their heat transfer mechanisms and define more accurately the problem of the thermoelectric Q factor in both solid and liquid states. Homogeneous polycrystalline specimens were produced in evacuated and sealed-off quartz ampules under specific temperature conditions. The phase composition of the obtained specimens was determined by thermal and metallographic analyses. The heat conductance was measured by the absolute method under stationary temperature conditions. Figures in the original article show the temperature dependence of the thermal conductance of Cu_3AsSe_4, Cu_3SbSe_4, and $CuSbTe_2$. In the solid state up to the point of melting, the basic heat transfer mechanism in Cu_3AsSe_4 is phonon-based. The n-type share of thermal conductivity computed

USSR

GADZHIYEV, G. G., and MAGOMEDOV, YA. B., Neorganicheskiye Materialy, Vol 6, No 2, Feb 70, pp 387-388

according to the Wiedemann-Franz law is, at room temperature, $5.2 \cdot 10^{-3}$ w/m·deg, and increases with temperature, attaining, prior to melting, 0.5 w/m·deg. After melting it drops abruptly. Compraison of experimental data with those of Wiedemann-Franz indicates the presence of an additional heat transfer mechanism in the Cu_3AsSe_4 melt, which is attributed to bipolar thermal conductance. The curve of Cu_3SbSe_4 is similar tc that of Cu_3AsSe_4. There is no abrupt drop in thermal conductance in Cu_3SbSe_4, however. In the $CuSbTe_2$ curve, the heat carriers from room temperature to the melting point, are electrons and phonons. At room temperature the electron share of heat conductance exceeds the phonon share. The increase in thermal conductance prior to melting indicates bipolar heat conductance. At the melting point, $CuSbTe_2$ heat conductance abruptly increases 1.5 times and continues to grow, indicating both electron and bipolar heat conductances. High electroconductivity, optimum concentration of carriers, and low heat conductance of $CuSbTe_2$, in comparison to other $A^{I}B^{V}C_2^{VI}$ compounds, indicates the potential application of this material for thermoelectric batteries.

2/2

1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--STRUCTURE AND PROPERTIES OF ZINC OXIDE SINGLE CRYSTAL LAYERS -U-

AUTHOR-(03)-RABADANOV, R.A., SEMILETOV, S.A., MAGOMEDOV, Z.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1431-6

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--SINGLE CRYSTAL, ZINC OXIDE, ELECTRIC PROPERTY, HALL EFFECT, ELECTRON DIFFRACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0955 STEP NO--UR/0181/70/012/005/1431/1436

CIRC ACCESSION NO--AP0133041

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133041

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELEC. PROPERTIES AND THE PERFECTION OF THE STRUCTURE WERE INVESTIGATED OF SINGLE CRYSTAL FILMS OF ZNO GROWN FROM THE GASEOUS PHASE ON THE PLANES OF CLEAVAGE OF MICA, AL SUB2 O SUB3, PLATES WITH (0001) ORIENTATION, (11201, (1011), AND (1012), AND ON THE (0001) FACE OF ZNO SINGLE CRYSTALS. THE FILM STRUCTURE WAS RELATED TO CONDITIONS OF ITS GROWTH AND TO THE ORIENTATION AND TREATMENT OF THE SUBSTRATE. ELECTRON DIFFRACTION DIAGRAMS WITH KIKUCHI LINES AND BANDS, AND PHOTOMICROGRAPHS SHOW A HIGH PERFECTION OF THE OBTAINED FILMS. THE MOBILITY AND CONCN. OF ELECTRONS IN THE BETTER SPECIMENS AS MEASURED BY THE HALL EFFECT AT ROOM TEMP. AND THE LIQ. N TEMP. ARE 140 AND 400 CM PRIME2 V SEC AND 2.4 TIMES 10 PRIME16 AND 6 TIMES 10 PRIME15 CM PRIME NEGATIVE3. THE GIVEN METHOD FOR PREPG. ZNO FILMS ASSURES A HIGH GROWTH RATE (SIMILAR TO 8 MU-MIN) AND GOOD REPRODUCIBILITY.

FACILITY: INST. KRISTALLOGR, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 577.391

MAGONYE, I. G., Institute of Biology, Academy of Sciences, Latvian SSR, Riga, and GRODZINSKIY, D. M., Institute of Plant Physiology, Academy of Sciences, Ukrainian SSR, Kiev

"Abscisic Acid as a Modifier of Plant Radiation Damage"

Kiev, Fiziologiya i Biokhimiya Kul'turnykh Rasteniy, Vol 5, No 4, Jul-Aug 73, pp 427-430

Abstract: Since proliferation of meristems determines their radiosensitivity, it may be assumed that factors operating upon cell division may modify radiation effects. The duckweed (Spirodela polyrrhiza Schleid) was studied in reaction to radiation. The plant has two conditions: actively metabolizing (phylloclade) and rest (turion). Increase in radiation damage was noted in growing sprouts stimulated by kinetin. When abscisic acid was applied to the plants, a decrease in growth and a corresponding decrease in radiosensitivity resulted. Changes in the synthesis of nucleic acids and protein in plant development were considered. Synthesis of DNA and protein under the influence of abscisic acid was examined, using 2-C^{14} thymidine and 2-C^{14} glycine to determine intensity of synthesis of DNA and protein respectively. In both cases inclusion of the tracers was dependent upon the length of

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USSR

MAGONYE, I. G., and GRODZINSKIY, D. M., Fiziologiya i Biokhimiya Kul'turnykh Rasteniy, Vol 5, No 4, Jul-Aug 73, pp 427-430

action of abscisic acid. An increase of DNA synthesis 24 hours after application of abscisic acid may reflect an accumulation of S-phase cells with inhibition of growth processes of fully formed sprouts. Results indicate that regulators of growth processes should be further investigated for modification of radiation damage.

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USSR

UDC: 616.22-008.4-089.28-78

PUPKO, I. D., ULASHKEVICH, Yu. V., MAGRACHEV, A. Z., BORONETS, V. P., DOLGOV, V. K., LAPSHIN, V. A., DEKHTYAR, B. S., VAYNSHTEYN, A. M.

"A Voice-Forming Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 28, 1970, Soviet Patent No 280548, Class 21, filed 9 Jun 69, p 42

Abstract: This Author's Certificate introduces a voice-forming device which contains a main current generator, projector and self-contained power supply. As a distinguishing feature of the patent, the sound spectrum of the projected oscillations is approximated to that of natural speech by adding a noise generator, a noise amplifier, and an operating mode commutator.

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USSR UDC:

AKOPOVA, A. B., KARTUZHANSKIY, A. L., MAGRADZE, N. V., and MELKUMYAN, L. V.

"Some Changes in the Parameters of the Paths of Particles in Nuclear Emulsions Under the Effect of a Pulsed Electric Field"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR: Fizika, Vol 6, No 6, 1971, pp 508-511

Abstract: Using the Pu^{239} alpha-particle track regression example (5.15 Mev energy) in BR-type, 200 μ nuclear emulsion layers, the authors attempt to show and evaluate information distortion. Multiple field pulses with an intensity of (E) $1.5\text{-}6.0\cdot10^4$ v/cm (where the values of E are given with the dielectric properties of the emulsion layer considered) are fed onto the emulsion layer. Individual pulse duration is 3.5 msec at a frequency of 200 pulses/min. The results show a progressive decrease in the length of particle tracks as E increases at a constant number of pulses or as the number of pulses increases at a constant E. Significant changes in the angular distribution of tracks in the emulsion were observed under the effect of a pulsed electric field. The changes were of the type where the particles tended to orient along the field without regard to their initial direction. Bar graphs are given which show an increase in the dip angle of the tracks which is analogous to the shortening

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AKOPOVA, A. B., et al., Izvestiya Akademii Nauk Armyanskoy SSR: Fizika, Vol 6, No 6, 1971, pp 508-511

of their length. A similar effect in the distortion of track parameters was also observed by the authors in Ya- and N-1-type emulsion layers. The most probable explanation for the physical observation could be the effect of the pulsed electric field on the gel which changes its physico-mechanical characteristics. Original article: two figures, one table, and seven bibliographic entires.

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USSR

UDC 539.1.073.7:77.023:534.29

AKOPOVA, A. B., MAGRADZE, N. V., MELKUMYAN, L. Y., SAL'MAN, A. G., Yerevan Physics Institute

"Acoustical Method for Processing of Glued Nuclear Emulsion Layers"

Moscow, Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, No. 6, Nov/Dec 71, pp 441-443

Abstract: Experiments were conducted on emulsion layers of the BR type of thickness 400 and 500 μ irradiated on the Yerevan accelerator by a 3.8 Gev electron beam with an intensity of 10^4 particles/cm^2. The purpose of the study was to intensify the complete cycle of processing nuclear layers with an increase in the quality of the developed image. It was shown in developing the accelerated method for emulsion layer development in the free state by means of high-frequency ultrasonic oscillations that the method is inapplicable for glued layers due to the formation of a set of bubbles caused by certain features of the ultrasound. Upon going to the region of low sound frequencies free from such undesireable effects, it was possible to completely

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AKOPOVA, A. B., et al, Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, No. 6, Nov/Dec 71, pp 441-443

avoid bubbling of the layer and to develop an optimal regime for the photographic processing of glued layers in the sonic field at a frequency of 50 Hz and an amplitude of 1.5 mm. In developing the glued layers diffusion of the components of the solutions was obtained only from one surface of the emulsion layer. As distinct from sonic processing of glued layers which leads to a 4-fold acceleration of the development process, the duration of the working in this case was shortened on the average by only a factor of 2 as compared with the ordinary process. As expected the doubling of the acceleration of diffusion of the developing material in the layer and the reaction product from the layer into the solution contribute to the decrease in the grain background of fog and to a drop in the inhomogeneity of the development over the depth of the layer (10-15%), thus increasing the reliability of the identification of the events recorded. A table is given showing the photographic parameters over the depth of emulsion layers processed by the ordinary method and under acoustical oscillations. It shows that acoustical oscillations raise the sensitivity-fog ratio by 15% on the average. The greatest intensification of all stages of the photographic development was noted in stages

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USSR

AKOPOVA, A. B., et al, Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, No 6, Nov/Dec 71, pp 441-443

for which the role of diffusion exchange played an especially great role. A rise in the rate of swelling of the emulsion layer in a sonic field, aiding the expansion of intermicellar channels and contributing to the acceleration of diffusion of thiosulphate in the gelatin to the silver halogenide crystals was established experimentally. Acoustical oscillations applied to the emulsion-solution system with a frequency of 50 Hz thus considerably reduce the activation energy for diffusion of the reacting molecules, which is verified by the growth of the relative sonic effect with an increase in the magnitude of the oscillations from 0.4 to 1.5 mm. A device for such processing is pictured.

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USSR UDC 77

AKOPOVA, A. B., MAGRADZE, N. V., MELKUMYAN, L. V.

"Effect of an Electric Field on Taking a Latent Image in Emulsion Layers"

V sb. Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda fotogr. chuvstvitel'nosti (International Congress on Photographic Science, Moscow, 1970, Nature of Photographic Sensitivity -- Collection of Works), no place of publication given, Vneshtorgizdat, no year given, pp 180-186 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1369)

Translation: The action of 5-6 kv field pulses of 200-300 usec duration with a frequency of 10 Hz on the resorption of the latent image of relativistic particles (π-mesons or 3 Gev electrons) and slow electrons was investigated in 400 u layers of the nuclear emulsion NIKFI-BR-1. The resorption was very clear, especially for relativistic particles, and intensified with an increase in the total number of pulses. The effect of the field on the sensitivity of the layers was slight and could be compensated by a certain lengthening of the development. The resorption action of the field is thus sharply different for sensitivity centers and latent image centers. A. L. Kartuzhanskiy.

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1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--DETERMINATION OF THE AVERAGE EFFECTIVE RADIUS OF EVAPORATION CENTERS IN THE NUCLEATE BOILING OF LIQUIDS -U-

AUTHOR-(03)-RATIANI, G.V., SHEKRILADZE, I.G., MAGRAKVELIDZE, T.SH.

COUNTRY OF INFO--USSR

SOURCE--SOOBSHCH. AKAD. NAUK GRUZ. SSR 1970, 57(1), 137-40

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEATE BOILING, PHASE EQUILIBRIUM, SURFACE TENSION, NUCLEATION, ETHANOL, BENZENE, CONIC BODY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1451 STEP NO--UR/0251/70/057/001/0137/0140

CIRC ACCESSION NO--AP0118440

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118440

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE AV. EFFECTIVE RADIUS, PO, OF EVAPG. CENTERS ON THE PROPERTIES OF THE SOLID LIQ. INTERFACE WAS STUDIED. FOR A CONE, ANGLE 2 BETA, FOR THE CASE WHEN O IS SMALLER THAN O IS SMALLER THAN BETA, WHER E THETA IS THE WETTING ANGLE, THE GEOMETRIC REPEESENTATION GAVE PO EQUALS (R MINUS L SUBWET SIN BETA)-COS)BETA- THETA), WHERE L SUBWET IS THE LENGHT OF THE WETTED SIDE OF THE CONE, CAN BE REPLACED BY RUO , WHERE U SUB9 IS THE RATE OF WETTING AT THETA EQUALS O AND GAMMA IS THE TIME GETWEEN A RISING BUBBLE AND THE FORMING OF THE NEXT BUBBLE. ON THE BAIS OF THIS RELATION, WITH INCREASE IN HEATING ASSOCD, WITH A DECREASE OF GAMMA, P SUBO INCREASED, WHEREAS R AND THETA REMAINED CONT. THIS WAS CONFIRMED WITH ETOH AND C SUB6 H SUB6 ON SURFACES WITH DIFFERNT CONES AS EVAPN. CENTERS. WHENTHETA IS SMALLER THAN BETA, THE SLOPE OF THE EVAPN. CURVE IS HIGHER.

UNCLASSIFIED

Acc. Nr AP0045161 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code UR0191

M

91076e **Curing a thermosetting furfural-phenol-formaldehyde resin.** Magrupov, [illegible] Abdurashidov, T. R. (USSR). *Plast. Massy* 1970(11), 48-50 (Russ). A thermosetting furfural (I)-phenol-HCHO resin FM-2 was hardened with $PhSO_3H$, $ZnCl_2$, maleic anhydride, phthalic anhydride, and Bz_2O_2 at 130-50°. Most effective were 2% $PhSO_3H$ or 5% $ZnCl_2$ (gel time, 15 and 17 sec, resp.). Addn. of I or PhOH inhibited the hardening, presumably due to a reaction between the monomers and the functional groups of FM-2. An increase in the hardening rate was obsd. in the presence of 5% Bz_2O_2 or dicumyl peroxide. Hardening of FM-2 involved polycondensation and partial polymn. CKJR

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REEL/FRAME
19780061

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1/2 029 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--EFFECT OF OXYGEN ON THE ELECTRICAL CONDUCTIVITY OF NICKEL NITRATE FILLED, HEAT TREATED POLYACRYLONITRILE -U-

AUTHOR-(03)-MAGRUPOV, M.A., GUFUROV, KH.M., GAFUROV, I.

COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970, 14(1), 20-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--OXYGEN, ELECTRICAL CONDUCTIVITY, NITRATE, NICKEL COMPOUND, ACRYLONTRILE, THERMAL EFFECT, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1958 STEP NO--UR/0291/70/014/001/0020/0025

CIRC ACCESSION NO--AP0123739

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0123739
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYACRYLONITRILE (I) FILLED WITH 0-55.5 WT.PERCENT NI(NO SUB3)SUB2 WAS ANNEALED IN VACUUM AT 220, 300, OR 400DEGREES. THE ELEC. COND. (SIGMA) AND THE ACTIVATION ENERGY (E) OF THE ELEC. COND. OF THE ANNEALED I SAMPLES WERE DETD. AFTER HEATING THEM IN AIR AT 101-240DEGREES. THERE IS AN INCREASE OF SIGMA AND A DECREASE OF E (DETD. AT 20DEGREES IN AIR) WITH AN INCREASE IN NI(NO SUB3)SUB2 CONTENTS AND ANNEALING TEMP. HEATING IN AIR SAMPLES ANNEALED BELOW 300DEGREES (THE TEMP. OF NI(NO SUB3)SUB2 DECOMPN. TO NIO WHICH ABSORBS O) CAUSES LOWERING OF SIGMA AND E; FOR I ANNEALED ABOVE 300DEGREES, SIGNA INCREASES AND E DECREASES. FACILITY: TASHKENT. GOSUNIV. IM. LENINA, TASHKENT, USSR.

UNCLASSIFIED

USSR

UDC 624.074.4.7

MAGULA, V. E., Doctor of Technical Sciences, Professor (Nikolayevskiy Shipbuilding Institute)

"Calculation of a Flexible Cylindrical Shell"

Moscow, Stroitel'naya Mekhanika i Raschet Sooruzheniy, No 2, 1973, pp 26-29

Abstract: Within the limits of a two-dimensional problem of the flexure of a flexible rod, equations are compiled for the equilibrium of an elastic cylindrical shell loaded by normal and longitudinal forces. The loads are distributed uniformly along the generatrices and randomly along the directrix. A step-by step method is proposed for a numerical solution of the general problem. 3 figures. 3 references.

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Acc. Nr: AP0044409 Ref. Code: UR 0660

PRIMARY SOURCE: Neyrofiziologiya, 1970, Vol 2, Nr 1, pp 97-99

THE EFFECT OF CONDITIONING POLARIZATION ON THE ACTION POTENTIAL OF MOLLUSC GIANT NEURONS

I. S. Magura, O. A. Kryshtal'

The A. A. Bogomoletz Institute of Physiology, Academy of Sciences, Ukrainian SSR, Kiev

Summary

The effect of conditioning displacement of membrane potential on the mechanism of generation of action potentials (AP) was studied. The effect of conditioning was revealed by changes in the amplitude of AP, its first derivative and transmembrane currents (under voltage clamp conditions). It was found that conditioning membrane potential change causes at least two reaction exerting an opposite influence upon the mechanism of AP generation. One of them is similar to that described on other excitable tissues and shows activation (with hyperpolarization) and inactivation (with depolarization) of the AP generation mechanism. The other promotes either an increase in effectiveness of this mechanism (with depolarization) or a decrease in it (with hyperpolarization). The possible nature of this change in effectiveness is discussed.

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REEL/FRAME
19771027

Conditioning polarization also influences the system producing membrane repolarization during the AP generation. This effect is manifested by changes in the reaction of the system to the effect of the TEA ions.

After displacement of the membrane potential to a certain stable level the changes in membrane properties lasted sometimes many seconds indicating high inertial properties of their systems.

19771028

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USSR

MAGZHNOV, R. Kh., SAIYANTS, T. I., TYUTINA, V. A., STARTSEVA, L. I., and GILMANOVA, G. A., Chair of Social Hygiene and Public Health Organization, Tashkent Medical Institute

"Study of Basic Cardiovascular Diseases in Tashkent From a Sociosanitary Aspect"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 10, Oct 70, pp 39-44

Abstract: The voluminous statistical data on the death rate due to cardiovascular diseases in the Soviet Union indicate that these diseases are the number-one killers. Not only medical but also sociohygienic and socioeconomic measures must be taken to combat this set of diseases; however, the etiology, pathogenesis, and treatment have not yet been studied in detail. A study was made of the characteristics of cardiovascular diseases in relation to work and living conditions, characteristics of the spread of cardiovascular pathology in nosological forms, and analysis of cardiovascular diseases with time loss in work capacity, disability, and death. Data from the medical-prophylactic records in Tashkent were used. Data on workers from various Tashkent industries were included. Among this group

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201910005-1"

USSR

MAGZUMOV, B. Kh., et al, Meditsinskiy Zhurnal Uzbekistana, No 10, Oct 70, pp 39-44

7.8% had cardiovascular diseases. Hypertension was found most frequently in women. Those in sedentary occupations requiring little physical exercise were more susceptible to hypertension than those engaged in physical work. As a result of this study, it was recommended that steps be taken to combat rheumatic fever, influenza, and other infectious diseases, to specifically treat those who live and work under conditions which promote cardiovascular disease, and to carry out sanitary-educational work in the field of cardiovascular diseases.

2/2

1/2 027 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--DWBA (DISTORTED WAVE BORN APPROXIMATION) CALCULATION OF THE AMPLITUDES OF RECTANGLE DIAGRAMS IN DIRECT NUCLEAR REACTIONS -U-

AUTHOR-(02)-MAGZUMOV, E.ZH., NEUDACHIN, V.G.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETT. B 1970, 31(3), 106-8

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--APPROXIMATION METHOD, PROTON INTERACTION, BERYLLIUM ISOTOPE, EXCITED NUCLEUS, ANGULAR DISTRIBUTION, WAVE FUNCTION, DIFFERENTIAL CROSS SECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1466 STEP NO--NE/0000/70/031/003/0106/0108

CIRC ACCESSION NO--AP0101552

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201910005-1"

2/2 027 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0101552

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIFFERENTIAL CROSS SECTIONS (D SIGMA-D OMEGA) WERE CALCD. FOR PRIME9 BE(P, P PRIME) PRIME9 BE (E SUBP EQUALS 3, 7, 12, 20 MEV) AND PRIME10 B(T, P) PRIME12 B (E SUBT EQUALS 5, 10, 15, 20 MEV), DESCRIBED WITH THE RECTANGLE DIAGRAM (M., ET AL., 1968). THE DWBA WITH SURFACE INTERACTION (N. K. GLENDENNING, 1957) IS USED. THE FORM OF THE ANGULAR DISTRIBUTION IS INVARIANT AS COMPARED TO THE CASE OF THE PLANE WAVES. THE ABS. VALUES OCF THE D SIGMA-D OMEGA DECREASE RAPIDLY WITH INCREASING E SUBP(T). THE ABS. VALUES OF THE D SIGMA-D OMEGA CAN BE OBTAINED WITHIN THE PROPER ORDER OF MAGNITUDE; IN PARTICULAR, THE VALUE FOR THE (T, P) REACTION REALIZED THROUGH THE RECTANGLE DIAGRAM FOR E SUBT EQUALS 5-10 MEV IS ONLY SLIGHTLY SMALLER THAN THE USUAL D SUBMA-D OMEGA OF THE POLE (T, P) REACTIONS (1-5 MB-STERADIAN). FACILITY: INST. NUCL. PHYS., MOSCOW STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--DIFFERENTIAL CROSS SECTIONS FOR QUADRANGULAR GRAPHS IN SOME DIRECT NUCLEAR REACTIONS -U-
AUTHOR-(03)-MAGZUMOV, E.ZH., NEUDACHIN, V.G., BELKIN, M.S.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(3), 589-97

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--DIFFERENTIAL CROSS SECTION, PROTON BAMBARDMENT, TRITON BOMBARDMENT, GRAPHIC TECHNIQUE, NUCLEAR REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/1041 STEP NO--UR/0367/70/011/003/0589/0597

CIRC ACCESSION NO--AP0110731
UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0110731

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF THE CALCN. OF THE DIFFERENTIAL CROSS SECTIONS OF (T, P) AND (P, P PRIME) REACTIONS, DESCRIBED BY QUADRANGULAR GRAPHS, USING DISTORTED WAVES, ARE GIVEN. THE PROBLEM OF THE DEPENDENCE OF THE CROSS SECTION UPON THE ENERGY OF INCIDENT PARTICLES WAS STUDIED. THE ABS. VALUES OF CROSS SECTIONS WERE ESTD. ON THE BASIS OF A SIMPLE "OSCILLATOR" APPROXN. BY RENORMALIZATIONS OF ONE PARTICLE REDUCED WIDTHS CALCD. FROM THE EXPTL. DATA ON (D, P) AND (T, D) REACTIONS. FACILITY: INST. YAD. FIZ., MOSK. GOS. UNIV., MOSCOW, USSR.

UNCLASSIFIED

USSR UDC: 535.651

GUKASOV, V. R., KARABEGOV, M. A., MAILOV, Yu. G.,MILYUKOV, L. Ya.,PASHKINA, M. N.

"Some Analytic Capabilities of the SFK-601 Spectrophotometer"

Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971, pp 20-24 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract No 2.32.1090 by V. S. Krasnova)

Translation: A functional diagram and results of experimental determinations of characteristics of the SFK-601 spectrophotometer (spectrocolorimeter), developed by the Special Design Bureau AP [Expansion unknown - tr] are presented. The SKF-601 is produced in a modular version using a basic monochromator unit with a modulator. The interchangeable light sources are attached to one side of the base unit, the attachments for performance of various measurements to the other side: absorptiometry, turbidimetry, nephelometry with a goniometric device and fluorometry. The operating principle of the device is based on measurement of the difference between 2 modulated light beams passing through cuvettes with the tested and comparison fluids, then going on to 1 light receiver. The energy of the light streams is converted to electrical signals, the difference of which after amplification is recorded by

USSR UDC: 535.651

GUKASOV, V. R., KARABEGOV, M. A., MAILOV, Yu. G., MILYUKOV, L. Ya., PASHKINA, M. N., Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisis, 1971, pp 20-24 (translated from Referativnyy Zhurnal Metrologiya i Izmerital'naya Tekhnika, No 2, 1972, Abstract No 2.32.1090 by V. S. Krasnova)

a microameter. The results of investigation of the operating characteristics of the SKF-601 in various operating modes has shown that the error is not over 1 %, nonlinearity of calibrated graphs 1-2%. The reproducibility of indications is 1% of the scale length of the device. 1 figure

2/2

1/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--THE IMPORTANCE OF CONTRAST ENEMA IN INVAGINATION OF THE LARGE INTESTINE -U-

AUTHOR-(02)-MAILYAN, A.G., MYAGKOV, A.V.

COUNTRY OF INFO--USSR

SOURCE--KHIRURGIYA, 1970, NR 3, PP 91-94

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LARGE INTESTINE, DIAGNOSIS, X RAY CONTRAST MEDIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1325 STEP NO--UR/0531/70/000/003/0091/0094

CIRC ACCESSION NO--AP0054209

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201910005-1"

2/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054209

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIAGNOSIS OF INVAGINATION OF THE LARGE INTESTINE DURING THE FIRST HOURS OF THE DISEASE IS VERY DIFFICULT. CONTRAST RETROGRADE INVESTIGATION OF THE LARGE INTESTINE HELPS TO SOLVE A NUMBER OF PROBLEMS WHICH INFLUENCE THE CHOICE OF THE MODE OF THERAPY. IN MOBILITY OF THE HEAD OF THE INVAGINATED INTESTINE IT IS EXPEDIENT TO ATTEMPT DISINVAGINATION DIRECTLY UNDER THE SCREEN WITH THE AID OF A CONTRAST ENEMA. IN PROPER EMPLOYMENT THE PROPOSED TECHNIQUE IS SAFE AND IT SHOULD BE WIDELY USED.

UNCLASSIFIED

MAILYAN, E. S.

Space Physiology

ORIGINAL ARTICLES

SPACE BIOLOGY

SO: JPRS 54396
03 Nov 1971

UDC 612.2-06:612.766.2

EFFECT OF HYPODYNAMIA ON GAS EXCHANGE IN ANIMALS (All-space physiology)

[Article by Ye. A. Kovalenko, V. L. Popkov, E. S. Mailyan, Yu. S. Galushko, N. V. Gordeycheva, Yu. I. Kondrat'yev, N. A. Ilyushko, A. N. Potapov, L. N. Grinberg and V. I. Sevast'yanov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 4, pp 3-8, 1971, submitted for publication 8 December 1969]

Abstract: This paper reports on investigations of the pathogenesis of prolonged hypokinesia (up to 100 days), including total gas exchange, gas homeostasis in tissues, rate of *in vivo* oxygen consumption in muscles (polarographic method), tissue respiration and oxidative phosphorylation in the skeletal muscles, myocardium, brain and liver, as well as oxidative processes in liver mitochondria. The weight of the animals and individual skeletal muscles of the limbs was also examined. On the 120th day of hypokinesia functional (static and dynamic) tests were performed to determine work capacity and acute hypoxia tolerance of animals. During an exposure to 60-day hypokinesia the dogs showed a decrease in gas exchange which was most clearly pronounced by the 30th day. By the end of the experiment gas exchange increased and immediately returned to a normal level after the experiment. Rats exposed to a longer hypokinesia exhibited no noticeable changes in total gas exchange at early stages of the experiment and a distinct acceleration of gas exchange and regional oxygen consumption in muscles by the 90th-100th day. Changes in the oxidative processes in tissues were found during the 30th-60th day of hypokinesia. The rats also revealed substantial weight losses due to a decrease

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UDC 612.2+612.76

POPKOV, V. L., MAILYAN, E. S., GALUSHKO, Yu. S., KOVALENKO, Ye. A., ZAYTSEVA, Ye. I., NITOCHKINA, I. A., STULOVA, L. V., and RYAZHSKIY, A. V., Institute for Biomedical Problems

"Shifts in Gas Exchange, Gas Homeostasis, and Tissue Respiration In Rats During Prolonged Hypokinesia"

Leningrad, Fiziologicheskiy Zhurnal USSR imeni I. M. Sechenov, Vol 41, No 12, 1970, pp 1,808-1,812

Abstract: General gas exchange, pO_2, and pCO_2 did not change significantly in the tissues of rats kept immobilized in special cages for 60 days. However, during the second month of the experiment, there were periods when the intensity of respiration increased in the liver and decreased in the myocardium. After two months of hypokinesia, the weight of experimental rats was substantially less than that of the control (273±10 g and 392±18 g, respectively). Also the physical fitness of the experimental animals declined sharply with respect to both dynamic and static work. The duration of maximum dynamic work decreased more than 2.5-fold while the capacity for static work decreased 9-fold.

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USSR

KAZARYAN, E. M., MAILYAN, G. L., ENFIADZHYAN, R. A., Yerevan State University

"Scattering of a Nonlocalized Exciton by Phonons in Thin Quantized Semiconductor Films"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR, Fizika, Vol 8, No 1, 1973, pp 47-53

Abstract: The authors compute the relaxation time of a nonlocalized exciton due to scattering by photons in quantized thin-film semiconductors. Cases of acoustic and optical phonons are examined. Relations are found for relaxation time as a function of energy and film thickness for different electron/hole mass ratios. In conclusion, the authors thank P. A. Bezigranyan for continued interest in the work.

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UNCLASSIFIED PROCESSING DATE--11SEP70

1/2 017

TITLE--GAS PHASE IN THE FLUIDIZED BED CHLORIDIZING ROASTING OF PYRITE CINDERS -U-

AUTHOR--ZAK, M.S., LEYZEROVICH, G.YA., MAISKIY, O.V.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(1), 13-16

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--FLUIDIZED BED, PYRITE, GAS STATE, WATER VAPOR, CALCIUM CHLORIDE, MELTING POINT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0136/70/043/001/0013/0016

PROXY REEL/FRAME--1981/1738

CIRC ACCESSION NO--AP0051526

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

2/2 017

CIRC ACCESSION NO--AP0051526

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PYRITE CINDERS MIXED WITH CACL SUB2 WERE ROASTED IN A FLUIDIZED BED, USING NATURAL GAS AS FUEL. AT 1000-1100DEGREES, CACL SUB2 VOLATILIZED AND DECOMPD. TO CAO AND OTHER HIGH MELTING COMPDS. THE OPTIMUM O CONCN. FOR THE VOLATILIZATION OF SIMILAR TO 70PERCENT OF THE CU AND ZN WAS 9-10PERCENT AT 1000DEGREES AND 4-6PERCENT AT 1050DEGREES, AND BEST PARTICLE SIZE WAS SMALLER THAN 0.074 MM. INCREASING THE O CONCN. MARKEDLY DECREASED THE CU VOLATILIZATION RATE, AND TO A LESSER DEGREE THAT OF ZN. AT LARGER THAN 10PERCENT, H SUB2 O VAPOR HAD A DELETERIOUS EFFECT ON CU AND ZN VOLATILIZATION, TO A SMALLER DEGREE ON AG, AND LITTLE ON AU. THE VOLATILIZATION DECREASED WITH INCREASING CINDER PARTICLE SIZE.

UNCLASSIFIED

UDC 547.814'753.07

USSR

DZHAPARIDZE, K. G., MAISURADZE, D. P., GACHECHILADZE, G. G., and GOMELAURI, E. S., Institute of Cybernetics, Acad. Sc. Georgian SSR, Tbilisi

"Synthesis and Some Physico-Chemical Properties of 6-Nitro-2H-Chromen-2-Spiro-2'-N-Alkyl-3',3'-dimethylindolines"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 71, pp 775-777

Abstract: Indoline spirochromenes (spiropyrones) with various alkyl substituents on the nitrogen atom were synthesized. Two grams of 2,3,3-trimethylindolenine alkyl iodide was decomposed with 5% aqueous base. The oil formed was extracted with ether, washed with water, ether was evaporated and the residue dissolved in ethanol. To this solution an equimolar quantity of 5-nitrosalicylaldehyde was added and refluxed for 2 hrs. After cooling, the pure product crystallized. Most of the compounds synthesized in this fashion were photochromic in the crystalline state. This phenomenon increased with increased length of the alkyl radical, due to better packing of the molecules in crystalline lattice. The melting point dropped as the chain of alkyl substituents increased in length.

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Molecular Physics

UDC 535.373.2

USSR

ANTIPENKO, K. M., DMITRYUK, A. V., ZUBKOVA, V. S., KARAPETYAN, G. O., and MAK, A. A., Institute of Precision Mechanics and Optics

"Cooperative Processes in Activated Glasses"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 37, No 3, 1973, pp 466-469

Abstract: Cooperative phenomena were found and studied in glasses activated with Yb--Tb, Yb—Eu. It is shown that there are at least two mechanisms for anti-Stokes excitation of the Tb^{3+} and Eu^{3+} ions: fast (cooperative sensitized luminescence) and slow (combinational excitation). Some quantitative parameters of the cooperative processes were determined. A study was made of the functional dependence of the efficiency of the cooperative processes on excitation power and energy, glass structure and composition, temperature, and activator concentration ratio. It is shown that disorder of the structure of the glasses does not prevent the occurrence in them of cumulative processes such as cooperative sensitization and combinational excitation, the efficiency of the cumulative processes in the glasses being commensurable with the efficiency of two-photon absorption with the participation of the virtual level.

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UDC 621.378.3; 535.89

USSR

MAK, A. A., Doctor of Sciences, MIT'KIN, V. M., SOMS, L. N., STEPANOV, A. I., Candidate of Sciences, SHCHAVELEV, O. S., Candidate of Sciences

"On Thermo-Optical Constants of Activated Glass"

Leningrad, Optiko-mekhanicheskaya promyshlennost', No. 9, Sep 71, pp 42-45

Abstract: A simple method is described for determining the thermo-optical constants of glass and the possibilities of obtaining glasses with small thermo-optical constants is discussed. It is noted that optical pumping of the active element of a laser is accompanied by heating of the laser and the formation of temperature gradients in the transverse cross section which cause stresses and double refraction, so that optical distortions arise in the element. Although many methods have been described for overcoming the harmful effects of distortions caused by these effects on the generation process, it is suggested that a more radical method would be the development of materials in which thermal distortions would be sufficient small. Three constants are discussed: W, the thermo-optical constant ordinarily applied in optics; P and Q, constants characterizing the distortion averaged for two polarizations, and the double refraction.

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USSR

MAK, A. A., et al, Optiko-mekhanicheskaya promyshlennost', No. 9, Sep 71, pp 42-45

A table is given showing the values of P, Q and W for the following types of glass: KGSS3, KGSS7, LGS24-5, LGS28-2, LGS36, KGSS56 and KGSS1621. It is noted that for laser applications one should use a glass with zero or fairly small values of the constants W, P and Q. Studies showed that the thermo-optical constant W of the glass changes considerably with the composition of the glass. Its values can be much less than zero, 0 and negative. The constant P should be highly dependent on the composition of the glasses and its value can vary from -1 to +1 to the fifth power, so that the majority of compositions of industrial glasses and neodymium glasses should be characterized by values of P considerably less than zero. The constant Q depends on the composition of the glass to a considerably less degree than P. In the majority of silicate and phosphate glasses the constant Q is small and does not exceed $0.1 \cdot 10^{-5}$ deg^{-1}. It is concluded that it is possible in principle to obtain glasses with small values of the thermo-optical constants W, P and Q.

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172 044 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ISOLATION OF A LONGITUDINAL OSCILLATION MODE IN SOLID STATE LASERS -U-

AUTHOR-(05)-GALAKTICNOVA, N.M., GARKAVI, G.A., YEGOROVA, V.F., MAK, A.A., FROMZEL, V.A.

COUNTRY OF INFO--USSR

SOURCE--OPTIKA I SPEKTROSKOPIIA, VOL. 28, APR. 1970, P. 751-758

DATE PUBLISHED----APR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SOLID STATE LASER, RESONATOR, SINGLE MODE LASER, LUMINESCENCE SPECTRUM, LINE BROADENING, LASER PUMPING, NEODYMIUM GLASS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1225 STEP NO--UR/0051/70/028/000/0751/0758

CIRC ACCESSION NO--AP0124879

UNCLASSIFIED

2/2 044 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124879

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYTICAL DETERMINATION OF THE CONDITIONS UNDER WITH A SOLID STATE LASER WITH A COMPLEX RESONATOR WILL OPERATE IN A SINGLE AXIAL MODE (CONDITIONS UNDER WHICH NO OTHER AXIAL MODES CAN BE EXCITED BECAUSE OF THEIR LARGE LOSSES). THE ANALYSIS IS PERFORMED FOR ACTIVE MEDIA VARYING IN THE NATURE OF LUMINESCENT LINE BROADENING, AND ABOVE THRESHOLD PUMPING POWERS. THE INFLUENCE OF THE NATURE OF LUMINESCENT LINE BROADENING ON THE SELECTIVE CHARACTERISTICS OF A RESONATOR CONTAINING A FABRY PEROT ETALON IS EXAMINED, SHOWING THAT INHOMOGENEOUS BROADENING MAKES IT DIFFICULT TO OBTAIN A SINGLE AXIAL MODE. THE THEORETICAL RESULTS ARE VERIFIED BY EXPERIMENTS PERFORMED WITH A PULSED NEODYMIUM GLASS LASER AT ABOVE THRESHOLD PUMPING POWERS.

UNCLASSIFIED

1/2 034 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--THE SYSTEMS OF OPTICAL PUMPING OF THE SOLID BODY LASERS -U-

AUTHOR-(02)-KALININ, YU.A., MAK, A.A.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', NO 2, FEB 70, PP 61-71

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--OPTIC PUMPING, SOLID STATE LASER, BIBLIOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1596 STEP NO--UR/0237/70/000/002/0061/0071

CIRC ACCESSION NO--AP0118579

UNCLASSIFIED

2/2 034 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0118579
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW IS GIVEN OF WORKS DEALING WITH DESIGN AND STUDY OF THE SYSTEMS OF OPTICAL PUMPING OF THE SOLID BODY LASERS. THE MERITS AND SHORTCOMINGS OF BASIC DESIGNS OF THE PUMPING SYSTEMS IN USE AT PRESENT ARE DISCUSSED.

UNCLASSIFIED

UDC 621.886.6:539.319

USSR

GASPARYAN, S. A., STAKYAN, M. G., MAK, S. L., Yerevan Polytechnical Institute imeni K. Marks

"Evaluating the Effect of Stress Concentration Under Nonstationary Load Regimes"

Yerevan, Izvestiya Akademii nauk Armyanskoy SSR, Seriya tekhnicheskikh nauk, No. 4, 1971, pp 43-47

Abstract: The effect of stress concentration in terms of the longevity requirement is evaluated for groups of machine parts operating under conditions of cyclic overloads and upon which are imposed requirements for providing a certain "time resource" since the probability of nonbreakdown is very sensitive to changes in overstresses. The cyclic strength of smooth and notched parts (key connections) is discussed. The sums of the relative longevities a are considered as statistical values; a relationship is proposed for determining the probability value a. The effect of the concentration of stresses is evaluated by the coefficient α_σ which is the ratio of the probabilities of nonbreakdown $l(N)$ for smooth and notched parts. A probability estimate of the coefficient $l(N)$ is given as a function of the level of the overstresses, the form of the stress state, and given load regimes.

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UNCLASSIFIED PROCESSING DATE--11SEP70

1/2 008

TITLE--ON THE CALCULATION OF THE ENDURANCE UNDER NONSTATIONARY CONDITIONS OF LOADING -U-

AUTHOR--GASPARYAN, S.A., MAK, S.L.

COUNTRY OF INFO--USSR

SOURCE--YEREVAN, IZVESTIYA AKADEMII NAUK ARMYANSKOY SSR, SERIYA TEKHNICHESKIKH NAUK, VOL 23, NO 1, 1970, PP 11-17

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--BIBLIOGRAPHY, FATIGUE LIFE, CYCLIC ENDURANCE TEST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1409 STEP NO--UR/0173/70/023/001/0011/0017

CIRC ACCESSION NO--AP0104723

UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0104723

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF THE POSSIBILITY OF THE CALCULATION OF SECONDARY FATIGUE LIMITS TAKING INTO ACCOUNT THE PROBABILITY OF NONDESTRUCTION OVER THE PARAMETERS OF THE INITIAL FATIGUE CURVE AND INTEGRAL PARAMETER OF THE EVALUATION OF LOADING CONDITIONS Q PROPOSED EARLIER. A QUANTITATIVE EVALUATION IS GIVEN OF THE DEPENDENCE OF THE FATIGUE LIMIT UNDER STATIONARY LOADING CONDITIONS ON THE PARAMETER Q.

UNCLASSIFIED

USSR

UDC 678.674.004.14:621.397

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SEDOV, L. N., VLADIMIROVA, Z. V., SAPOZHNIKOVA, YE. L., MAKEYEVA, A. A., SEMENOV, L. G., MAK-MILLIN, D. M., BAKANOV, YU. A., DIDZHYULENE, D. I., MALKINA, F. S., and ZHLABIS, B. B.

"Polyester Hermetic-Sealing Compounds"

Moscow, Plasticheskiye Massy, No 6, 1970, pp 61-62

Abstract: The authors studied compounds for the hermetic sealing of horizontal output transformer coils for television receivers. These compounds should have low viscosity in the initial state and a high hardening rate up to 100°C. In the hardened state they should possess self-extinguishability, water resistance, good mechanical and electric insulation properties, and stability of properties up to 120°C. The principal components chosen were polyester resins PN-1 and PN-69. Because of the requirement of self-extinguishability, special additives (antimony trioxide and chlorine- or fluorine-containing polymers) were introduced into the resins. In addition, mineral fillers (talc, mica, powdered quartz, titanium dioxide, powdered silica gel, etc.) were added to give the sealing compounds

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USSR

SEDOV, L. N., et al, Plasticheskiye Massy, No 6, 1970, pp 61-62

the requisite viscosity and to lower their cost. The article gives data on the hermetic sealing process. These self-extinguishing compounds are being used for the hermetic sealing of horizontal output transformers for black-and-white (1 class) and color television sets and viewing monitors.

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USSR

UDC 550.837.73

KAMENETSKIY, F. M., YAKUBOVSKIY, YU. V., MIZYUK, L. YA., YAKHL'SKIY, A. A., TIMOFEYEV, V. M., MAKAGONOV, P. P., LUTSYSHIN, A. S., BOYKO, V. P.

"Device for Inductive Aeroelectric Exploration by the Transient Process Method"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, 8 May 70, p 61, Patent No 270123, Filed 19 Apr 65

Translation: 1. This Author's Certificate introduces a device for inductive aeroelectric exploration by the transient process method. The device comprises a pulse generator, a generator circuit, a receiving element, a control unit, amplifiers, commutators, storage elements, and a recording unit. It is distinguished by the fact that in order to improve the noiseproofness of transient process measurements in flight, the generator circuit is executed in the form of a system made up of the basic generator circuit placed between the aircraft and the receiving element at equal distances from both and two auxiliary circuits arranged one directly on the hull of the aircraft and the other, on the case of the receiving element.

2. A second device like item 1 is introduced, but it is distinguished by the fact that in order to obtain the required power in the basic generator circuit directly from the low-voltage on-board network and also to increase the steepness of the pulse fronts, the basic generator circuit is executed in

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KAMENETSKIY, F. M.,et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, 8 May 70, Patent No 270123, Filed 19 Apr 65

the form of several sections commuted by individual switches with a common control circuit.

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1/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--PREPARATION OF DIHYDRIC PHENOLS BY CATALYTIC OXIDATION OF PHENOL IN AQUEOUS SOLUTIONS -U-

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CIRC ACCESSION NO--AP0119484

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONTINUOUS CATALYTIC OXION. OF PHOH IN AQ. SOLN. YIELDED A MIXT. OF 1,2- (I) AND 1,4- C SUB6 H SUB4 (OH) SUB2 (II). THE OXIDATE WAS CONCD. WITH SIMULTANEOUS AZEOTROPIC DISTN. OF PHOH IN N, FOLLOWED BY EXTN. OF I AND II WITH ETOAC AND DIISOPROPYL ESTER AS SELECTIVE SOLVENTS. THE MAX. YIELD OF 70-5PERCENT I PLUS II WAS OBTAINED AT PH 3-5 AND 30 ATM WITH 5-15PERCENT PHOH SOLN. AND 0.01-0.03 MOLE PERCENT CUCL SUB2 AS CATALYST, BASED ON PHOH. II FORMATION WAS PREDOMINANT, THE CONVERSION OF PHOH BEING 20-5PERCENT.

FACILITY: NOVOKUIBYSHEVSK. FILIAL NIISS, NOVOKUIBYSHEVSK, USSR.

UNCLASSIFIED

MAKALOV A.N. 3.70

Acc. Nr: AA0101009 Abstracting Service: Ref. Code: UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent,

241382 FORMING APERTURES IN THIN-WALLED PIPES uses a device with a point (8) which is fixed on the press's slide block (9), a matrix (2) a mechanism for longitudinal movement of the pipe, a mechanism for turning the pipe in relation to the matrix, and a programming device which provides for the pre-set movements of the pipe. In order to enable automation of the process of piercing and to increase the precision of tooled details, the point's cross-section corresponds to the dimensions of the smallest window and enables a consecutive formation of a contour of a window of a pre-set configuration The mechanism for the longitudinal movement of the pipe, which is synchronised with the point's movement, is a carriage (15) with a pipe-clamping mechanism (17) The carriage is moved by the lead screw (13) and has ball guides (16). The mechanism for turning the pipe round its axis is made in the form of a lead roller (23) which is kinematically connected with the clamping mechanism.

In order to synchronise the movement of the

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pipe with the movement of the point, torque hydro-amplifiers are used for d riving the lead roller of the pipe-turning mechanism. The hydro-amplifiers are controlled by servo motors which provide for the pipe's movement, and determine the dimensions and the interposition of windows with the pre-set programme. 11.8.62. as 790903 25-8. SERAVIN, F.A. and MIKALOV, A. N. (10.9.69) Bul. 14/18.4.69. Class 7c, Int. Cl. B 21d.

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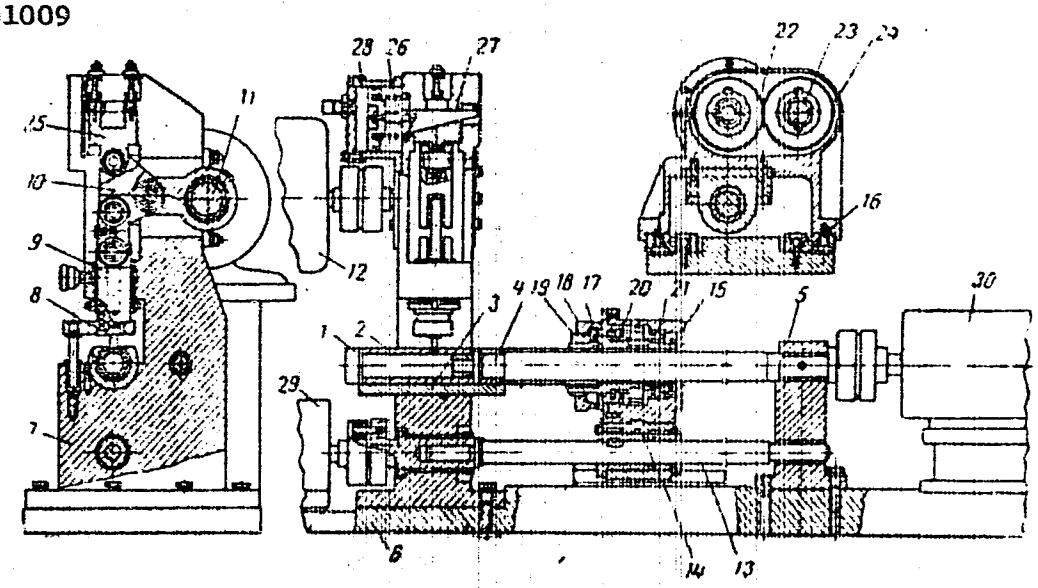

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UDC 621.317.757 (088.8)

YAROMENKO, A.S., ZEMLYANSKIY, A.V., MAKAL'SKIY, V.I., RIESE, V.S.

"Digital Analyzer Of Time Characteristics Of Transistor Circuits"

USSR Author Certificate No 297011, filed 16 Jan 69, published 4 June 71 (from RZh: Radiotekhnika, No 2, Feb 72, Abstract No 2A286P)

Translation: A digital analyzer is proposed for precise monitoring of the time characteristics of semiconductor devices which has an increased resolution and precision of measurements and assures the possibility of automation of measurements, which is achieved by the introduction into the analyzer of a time scaling device which assures operation of the analyzer in an extended time scale; a coincidence circuit, shapers of test and inhibiting pulses of square form, a subtraction circuit, three-amplitude discriminators, and also AND and NAND circuits. The time scaling device includes two crystal oscillators, the outputs of which are connected with the inputs of the coincidence circuit and the pulse shapers. The inputs of the latter are connected to the outputs of the logical control device; the AND and NAND circuits are connected with the outputs of the amplitude discriminators, to the inputs of which are fed the output signals of the subtraction circuit. The output of the shaper of inhibiting pulses is connected to one of the inputs of the subtraction circuit and the object under test to the other. One of the terminals for connection of the object under test is connected with the shaper of test pulses. A.K.

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Acc. Nr: A70045106 Abstracting Service: 5170 Ref. Code: 11R0442
INTERNAT. AEROSPACE ABST.

A70-23394 # General theory for the external orientation error of aerial photographs and deformation of the stereo model in aerial stereo photogrammetry (Zagal'na teoriia pomilok zovnishn'ogo orientuvannia aeroz'iomok ta deformatsiia stereomodeli v aerostereofotogrammetrii). O. S. Makar (L'vivs'kii Politekhnichnii Institut, Lvov, Ukrainian SSR). *Akademiia Nauk Ukrains'koi RSR, Dopovidi, Seriia B—Geologiia, Geofizika, Khimiia i Biologiia*, vol. 32, Jan. 1970, p. 46-51. 7 refs. In Ukrainian.

Analysis of the errors arising in aerial stereo photogrammetry as opposed to ground stereo photogrammetry, and description of the effects responsible for the deformation of the stereo model. Formulas are derived which account for the errors caused by lens distortion, internal orientation in aerial cameras and universal stereo instruments, refraction, mechanical and optical defects in the apparatus, and relative and absolute orientations. T.M.

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19780006

USSR

UDC 621.387.3

VORONCHEVA, V.R., MAKAR-LIMANOV, G. YE., METLITSKIY, YU. YA. (Moscow Electrovacuum Devices Plant)

"Glow-Discharge Indicator Thyratron"

USSR Author's Certificate No 254663, filed 4 Apr 68, published 17 Mar 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11A142P)

Translation: A glow-discharge thyratron intended for information readout without breakdown is patented. Inside the container for the device there are arranged in series the cathode, three grids, and the recording anode in the form of an extended plate with a hole laterally offset in relation to the hole for the first grid. The solid plate of the recording anode shields from the observer both the luminescence of the preparatory discharge and the luminescence of the recording anode. The readout anode, which is placed behind the recording anode, can be made in the form of a disk located perpendicular to the surface of the recording anode, or in the form of a pin [shtyr'], or a ring. The readout anode is offset to the side of the hole in the recording anode. Reading of information is accomplished by the admission of signals to the readout anode, during which firing of the discharge only takes place with the existence of a discharge at the recording anode. Quenching of the discharge is achieved because of pulse supply. I.Y.

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USSR

UDC: 621.791.019

MAKARA, A. M., GORDONNYY, V. G., DIBETS, A. T., SARZHEVSKIY, V. A., PARFESSA, G. I., Institute of Electric Welding imeni Ye. O. Paton

"Remelting of High-Strength Steels as a Means of Increasing the Resistance to the Formation of Cold Cracks During Welding"

Kiev, Avtomaticheskaya Svarka, No 8, Aug 73, pp 1-5.

Abstract: One method of improving the properties of high strength structural steels is refining of the initial metal, i.e., decreasing the content of harmful impurities, gasses, nonmetallic inclusions, and improvement of the initial structure of the metal. The use of electric-slag and cathode-ray remelting can significantly improve the ductility and toughness of the remelted steel by decreasing the content of sulphur, phosphorus, oxygen, nitrogen, hydrogen and nonmetallic inclusions. Following refining remelting, the resistance to the formation of cold cracks near a welded seam in type 35Kh2N2M and 42Kh2GSNM steels is increased by 50-60%.

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UDC 669.791.793:669.15-194

MAKARA, A. M., KOVALEV, YU. YA., and NOVIKOV, I. V., Institute of Electric Welding imeni Ye. O. Paton

"Effect of Electroslag Remelting on the Mechanical Properties of Electroslag-Welded Joints of Structural Alloy Steels"

Kiev, Avtomaticheskaya Svarka, No 3, Mar 73, pp 1-4

Abstract: Investigations were carried out at the Institute of Electric Welding for the purpose of determining the effectiveness of electroslag remelting of structural alloy steels and welding wire metal in order to increase the mechanical properties and prevent ruptures in joints made by electroslag welding. Tests were conducted on 20Kh2MA and 16GNMA steels (110-115 mm thick) weighing, respectively, 34 and 21 tons before remelting and 9 and 14 tons after remelting. The only significant changes in chemical composition after remelting were reduced amounts of S, O, and N. Steel 20Kh2MA had decreased strength and increased ductility after remelting and heat treatment (normalization and tempering) while strength and ductility both increased for steel 16GNMA after remelting and heat treatment. Steel 16GNMA also had better impact strength properties following welding and heat treatment at all investigated temperatures (20, -20, -40 and -50°C). With both of these steels the danger

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